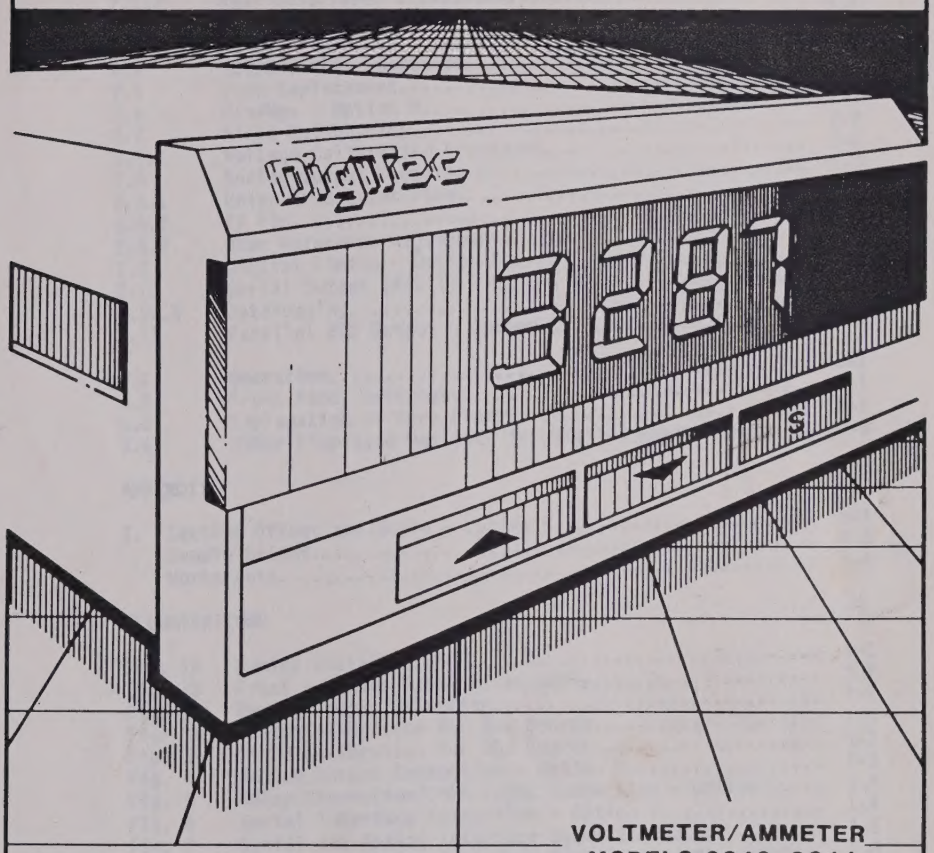
2402

# IQ-280 Series
# Intelligent Digital Panel Meters
## User's Guide




VOLTMETER/AMMETER
MODELS 2810, 2811,
2812, 2820

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MP MASTER
MA32047

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PARTS LIST

# SECTION ONE

## 1.1 General Description

The IQ-280 Series are single-channel, microprocessor-controlled Intelligent Digital Panel Meters. Four basic **Voltmeter/Ammeter** models offer three ranges of resolution.

**Model 2810** provides 3-1/2 digit, ±2,000 counts resolution.
**Model 2811 and 2820** provide 4 digit ±10,000 counts resolution.
**Model 2812** provides 4-1/2 digit ±20,000 counts resolution.

## 1.2 SelfCal™ Calibration

All IQ Series meters contain a unique calibration feature, **SelfCal™**. This feature ensures long-term measurement accuracy, achieved in part by the inclusion of a stable voltage reference (accurate to 5ppm/°C). Before the meter leaves the factory, the internal voltage reference is compared to a known voltage traceable to the National Bureau of Standards (NBS). From this comparison, a calibration factor is derived and stored in the unit's non-volatile memory.

During operation, the instrument alternately reads the input, voltage reference, and zero. These values are continuously compared; resultant data is used to compensate for temperature drift.

IQ-280 design ensures accurate operation with less than 0.01% error over one year of continuous operation. There is no need for tedious potentiometer adjustments.

## 1.3 Series Specifications

| DC VOLTAGE/CURRENT MODELS | | | |
|---|---|---|---|
| **Type Model** | 3-1/2 Digit 2810-XX | 4 Digit 2811-XX | 4-1/2 Digit 2812-XX |
| **Accuracy (±1 count)** | (±0.03% rdg ±0.05% rng) | (±0.02% rdg ±0.005% rng) | (±0.01% rdg ±0.005% rng) |
| -01 | ±199.9mV | ±999.9mV | ±199.99mV |
| -02 | ±1.999 V | ±9.999 V | ±1.9999 V |
| -03 | ±19.99 V | ±99.99 V | ±19.999 V |
| -04 | ±199.9 V | ±999.9 V | ±199.99 V |
| **Accuracy (±1 count)** | (±0.08% rdg ±0.05% rng) | (±0.07% rdg ±0.005% rng) | (±0.06% rdg ±0.005% rng) |
| -08 | ±199.9µA (1KΩ Sh) | ±999.9µA (1KΩ Sh) | ±199.99µA (10KΩ Sh) |
| -09 | ±1.999mA (100Ω) | ±9.999mA (100Ω) | ±1.9999mA (1KΩ) |
| -10 | ±19.99mA (10Ω) | ±99.99mA (10Ω) | ±19.999mA (10Ω) |
| -11 | ±199.9mA (1Ω) | ±999.9mA (1Ω) | ±199.99mA (1Ω) |
| -12 | ±1.999 A (.1Ω) | ±9.999 A (.1Ω) | ±1.9999 A (.1Ω) |

| PROCESS MONITOR MODELS | |
|---|---|
| Type<br>Accuracy<br>Model | 4 Digit<br>(±0.02% rdg ±0.005% rng ±1 count)<br>2820-XX |
| -22 | 0 to +5V |
| -23 | +1 to +5V |
| -24 | -5 to +5V |
| -25 | -10 to+10V |
| -26 | 0 to 20mA (50Ω Sh) |
| -27 | 4 to 20mA (50Ω Sh) |
| -28 | 0 to 50mA (20Ω Sh) |
| -29 | 10 to 50mA (20Ω Sh) |

## SPECIFICATIONS

| | |
|---|---|
| **DISPLAY** | 7-segment; 5-digit; vacuum fluorescent; 0.5" (13mm). |
| **NMR** | 60 dB typical at 50/60 Hz. |
| **CMV** | ±1400V peak, input to power line. |
| **CMRR** | 80 dB at 50/60 Hz, input to power line. |
| **CASE** | NEMA 12 oil-tight front panel seal, drip-proof rear. |
| **POWER** | 120V or 240V ac +10% -15%, 5VA (factory-set, user-changeable). |
| **DISPLAY RATE** | 2 updates per second nominal. |
| **INPUT** | Floating, protection to 1500V peak on ranges above 2V, 150V peak on 2V range, 10MΩ input impedance. |
| **ENVIRONMENT** | 0 to 50°C operating temperature, -40°C to +85°C storage temperature, 20% to 80% relative humidity, non-condensing. |
| **TERMINATIONS** | Screw terminals for power, inputs, limits option. Pin termination for STROBE/HOLD (see Figure 2). Accessories: Screw terminal connector (P/N 51-21891-01) and Solder terminal connector (P/N 51-07548-15) for Serial, Parallel, and Analog Output Options. |
| **A/D CONVERSION** | Voltage-to-frequency, microprocessor-controlled. Auto-zero, internal temperature controlled reference. |
| **SelfCal™** | Integration time 400.0ms nominal; temperature coefficient 50ppm/°C maximum; SelfCal™ calibration executed by the microprocessor approximately once every 4 seconds; internal reference temperature coefficient 5ppm/°C; stability 20ppm/1000 hours maximum. |

# SECTION TWO

## 2.1 Installation

Figure 1a illustrates the IQ-280 Series unit installation and assembly. Figure 1b focuses on Front Panel and Rear Drip Panel disassembly necessary to make configuration connections. Figures 12 and 13 illustrate the Main Board Schematic and Component Layout.

**CAUTION**

1. To maintain good noise immunity, connect AC Low to Input Terminal 1 and AC High to Input Terminal 2. Do not connect earth ground to the meter. Failure to make proper input power connections will cause erratic display.

2. During shipping, rear-terminal screws (see Figure 13) may loosen. Be sure all rear terminal screws are in place before applying AC Power. If a screw is missing, open and inspect the unit for the missing part. A loose screw could short the unit.

### 2.1.1 Front Panel Disassembly (See Figure 1b)

The Front Panel snaps out by pressing and holding in one of the levers (see A) on either side of the unit, and pulling the panel away from the unit.

To reinsert the panel, first insert one panel lever into place, then slide the other lever in and press on the panel to snap it into place.

### 2.1.2 Rear Drip Panel Disassembly (See Figure 1b)

To remove the Rear Drip Panel, first unscrew the bracket mount screws to loosen the panel. The panel is designed to slide out. **NOTE:** Between the slide grooves on the panel (see B) is a small retention nodule (see C) that secures the panel in place. To avoid breaking this retention nodule, slightly lift the loosened panel up from the unit before sliding it out.

When reinserting the panel, again slightly lift the retention nodule over the rear edge of the unit, then slide the panel into place.

## 2.2 Decimal Point Selection

For Decimal Point Selection on standard units (**units without front panel switches**), Figure 2 shows the location of connector J5 and the placement of W5. (For Decimal Point Selection on units with front panel switches, see Section 3.)

### 2.3 STROBE/HOLD (See Figure 2)

Short together pins J5 Pins 5a and 5b of a Berg connector to control strobe/hold. This will freeze the display and stop all processing.

### 2.4 120/240 Volt Operation (See Figure 2)

The position of jumpers W1, W2, and W3 control 120/240 Volt operation. These jumpers are soldered on the main board. To change the factory setting to 240V operation, pull out W1, insert it in W3 position, and remove W2.

### 2.5 Fuse Replacement (See Figure 2)

To replace the unit fuse F1 (P/N 52-17936-03), which is soldered on the main board, remove the unit from the case.

### 2.6 Min/Max - OPTION M

**MAX** represents the highest value displayed during the Run Mode. **MIN** represents the lowest value displayed during the Run Mode.

To display MAX, press ▲ . For MIN display, press ▼ . To reset the MIN or MAX value, press and hold either ▲ or ▼ , and press **S** to clear the display. Option M must be manually cleared upon power up.

### 2.7 Field Calibration

A Berg connector located near the microprocessor is available for field calibration of IQ-280 units. To access the connector, remove the unit from its case.

**(After March 1, 1984, the connector will be located at the rear section of the main board. To access these units, remove the rear drip panel as if making input connections.)**

All units should be recalibrated after one year of operation, although specified accuracy is maintained much longer. Most component settling values occur in the first year. Thereafter, specified accuracy is maintained for at least three years with the internal SelfCal™.

#### 2.7.1 Voltage Calibration Procedure (see Figure 3)

Old Boards:

1. Connect two momentary ON pushbuttons to the Berg Connector: one pushbutton (WHITE) between Pins 4 and 2 (data in and common); and one pushbutton (RED) between Pins 3 and 2 (clock in and common).
2. Connect DC voltage calibrator to Input screw terminals and apply 0 Volts.
3. Press WHITE pushbutton for at least 3 seconds and release.
4. Adjust calibration standard to + full scale (i.e. +2.000V DC for Model 2810-02).
5. Press and release the RED pushbutton.
6. Wait at least 10 seconds.
7. Adust calibration standard to minus (-) full scale (i.e. -2.000V DC for Model 2810-20).
8. Press and release the RED pushbutton.
9. Remove connection to Calibration Berg Connector.

New Boards:
1. Connect two momentary ON pushbuttons to the Berg Connector: one pushbutton (WHITE) between Pins 1 and 3 (data in and common); and one pushbutton (RED) between Pins 4 and 3 (clock in and common).
2. Connect DC voltage calibrator to Input screw terminals and apply 0 Volts.
3. Press WHITE pushbutton for at least 3 seconds and release.
4. Adjust calibration standard to + full scale (i.e. +2.000V DC for Model 2810-02).
5. Press and release the RED pushbutton.
6. Wait at least 10 seconds.
7. Adust calibration standard to minus (-) full scale (i.e. -2.000V DC for Model 2810-20).
8. Press and release the RED pushbutton.
9. Remove connection to Calibration Berg Connector.

## 2.8 Analog Output - Option H

Analog Output always reflects display and is effected by scale and offset. Option H is a 12-bit, digital-to-analog converter that outputs voltage proportional to a displayed value.

Model 2810 - each first digit count equal to 2.5 mV.
Models 2811 and 2820 - each 5 digit counts equal to 2.5 mV.
Model 2812 - each 10 digit counts equal to 2.5 mV.

### 2.8.1 Bipolar/Unipolar Mode (See Figure 4)

For **Bipolar** operation (-5/+5) connect positive output to Pin A of option card and connect negative output to Pin 1. For **Unipolar** operation (0/+10V) connect positive output to Pin A of option card and connect negative output to Pin 3.

### 2.8.2 2X Pin (See Figure 7)

The 2X Pin is used with the **Unipolar mode only.** Shorting Pin 12 to Pin N will double the analog output, allowing positive inputs to span 0 to +10V on the analog output. All negative inputs will be zero.

### 2.8.3 User Reference Adjustment (See Figure 4)

The analog reference set at the factory is 5V ± 1%. This reference may be trimmed or adjusted from 0 to 7V with the addition of a user-supplied 100K potentiometer on Pins C, D, and 4.

## 2.9 Digital Limits - Option C (See Figure 5)

Option C controls two open collector transistors (Q3 and Q4). Set Point 1 High and Low (Q3) controls J6 pin 5 (SP1). Set Point 2 High and Low (Q4) controls J6 pin 3 (SP2).

## 2.10 Serial Output (ASCII) - Option T

When equipped with Option T, the IQ-280 units provide an isolated 20mA and TTL compatible serial output. The optically isolated 20mA current source interface can be operated 4-wire half-duplex while providing up to ±1400V peak. Figure 6 illustrates the 4-wire half duplex operation for a 20mA current source or RS232 operation. In both, local transmission is terminated at the meter when SI- is pulled LOW (LOW is equal to or less than ground). Baud rate is selected by a jumper located on the Serial Option Board (Figure 7).

**** **Installation and features of IQ-280 units equipped with Option T will soon change to reflect the following:** the units will provide an isolated 20mA and RS232 serial output; local transmission will terminate at the meter when BUSY is pulled LOW; this input will be 20mA, RS232, or logic compatible; baud rate will be selected by a jumper located on rear connector Pins S and 15 (see Figure 7); to select 1200 Baud, Pins S and 15 on the rear connector will be shorted together.

### Option T Features

| | |
|---|---|
| $\overline{\text{SELECT}}$ | The SELECT line allows addressing more than one panel meter. When the SELECT line is pulled to logic LOW, a new line of data is transmitted over RS232 and 20mA lines. For continuous printing, the SELECT line should be shorted to Pins 11 and M. NOTE: If BUSY and SELECT are not used to control transmission, then jumper Pin 7 to Pin 9, and jumper Pin 11 to Pin M. |
| **Output Format** | Half duplex, isolated 20mA current source or RS232. Data format: one START bit, seven DATA bits, two STOP bits, and NO check on parity. |
| **Distance** | 10,000 ft. at 300 baud; 4,000 ft. at 1200 baud; ±12Vdc external supply. |
| **Transmission Sequence** | ASCII characters, Polarity, 5 digits (with decimal point location), and CR LF. |

### 2.10.1 Datalogging

With Option T, an IQ-280 unit can become a datalogging system when connected to a **Digitec Model 6610K Printer** (serial input with interval output). To connect the unit with the 6610K Printer, short together Pins 14 and R (labelled 6600 SELECT on the serial output board). This allows the unit to print on a programmable interval.

## 2.11 Parallel BCD Output - Option E

Figure 10 illustrates the Parallel BCD Output Board Schematic. The Parallel Interface Connector, labelled J1, is located on the top of the unit (see Figure 1). The logic LOW level "0" = +0.4V max at 1.6mA Sink. The logic HIGH level "1" = +2.4V min at 100µA Source.

### Option E Features

| | |
|---|---|
| **20 BCD LINES** | The data outputs are parallel BCD, one TTL load compatible, and valid while SELECT (Pin E) is LOW. |
| **$\overline{\text{PRINT}}$ (Pin C)** | When an update cycle begins, this pin goes logic HIGH; when the update cycle ends the pin goes logic LOW. |
| **POLARITY (Pin 3)** | A logic LOW indicates a positive reading. |
| **$\overline{\text{HOLD}}$ (Pin 5)** | When this pin receives a logic LOW, the meter maintains present BCD output until a logic HIGH is applied. Processing continues while the meter is in the HOLD state. |
| **$\overline{\text{SELECT}}$ (Pin E)** | When this pin receives a logic LOW, the state of the 20 BCD Lines is checked. If all the BCD Lines are tri-state, the unit writes to the BCD Lines and PRINT (Pin C) goes LOW. If any of the BCD Lines are active, the unit will not write and PRINT will remain HIGH. |
| **OVER FLOW (Pin 2)** | When a reading is greater than Full Scale, this pin will go logic HIGH. |

# SECTION THREE

## 3.1 Operation

All IQ-280 units are equipped with front panel membrane keys to set parameters for **Options C, F, and M.**

**Table 1. Menu Prompts in Sequence**

| | |
|---|---|
| SETUP<br>INPUT | Standard with Front Panel Switches |
| SP 1H<br>SP 1L<br>SP 2H<br>SP 2L<br>HYS | Option C |
| OFFSE<br>SCALE | Option F |
| dP<br>run | Standard with Front Panel Switches |

## 3.2 Front Panel Switches

The **S** switch has 3 functions: (1) press **S** to enter the SETUP CODE (28) to place the meter in Setup Mode; (2) press and hold **S** to scroll thru the display prompts, at a rate of one-per-second (release the switch when the appropriate parameter to be modified is displayed); (3) Enter the modified parameter and press **S** again. This will enter the modified parameter as the displayed value and STEP to the next prompt.

The ▲ switch increases the displayed value or toggles the display between several choices. Press and hold this switch to rapidly increase the displayed number.

The ▼ switch decreases the displayed value or toggles the display between several choices. Press and hold this switch to rapidly decrease the displayed number.

## 3.3 Explanation of Menu Prompts

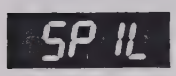
The following explanations apply to menu prompts which may appear on the IQ-280 Series **with front panel switches.**

**NOTE: Parameter entries are not stored in permanent memory until the unit completes the RUN cycle. When the SETUP mode is entered, the operator is allowed only two minutes between key-strokes. If two minutes elapse without a key-stroke, the unit will exit the SETUP mode, return to the RUN mode, and erase temporary memory.**

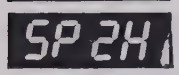
Press the **S** switch (Display: "SETUP"). Enter the appropriate Lock-Out Code (28). Press the switch until 28 is displayed, then press the switch. Once the lock-out code is entered, the unit enters SETUP mode.

This prompt precedes an actual input measurement (with true decimal point location). Scale and Offset factors are ignored and limits are not tested.

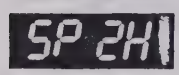
Enter a value for Set Point 1 High. Use either the or switch to raise or lower the displayed number to equal the desired set point value in polarity and counts. When the appropriate value is displayed, press **S** to enter the displayed number.



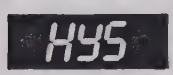

Enter a value for Set Point 1 Low. Use the same procedure described in SP 1H.




Enter a value for Set Point 2 High. Use the same procedure described in SP 1H.



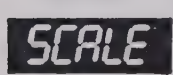

Enter a value for Set Point 2 Low. Use the same procedure described in SP 1H.




Enter a HYSTERESIS value in counts. Only one HYSTERESIS value can be entered and applies to all set points. The sign of the HYSTERESIS value is ignored. The HYSTERESIS value is always subtracted from high set points and added to low set points (see Figure 14).

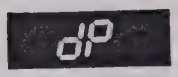
**NOTE: The value of Hysteresis is always positive, whether the displayed number is positive or negative. Set points are checked against the displayed reading, not the INPUT.**

To enter OFFSET, use the ▲ or ▼ switch to raise or lower the displayed reading to equal the calculated value for OFFSET. Press the **S** switch to enter the displayed reading into temporary memory and STEP to the next parameter.

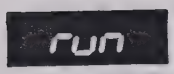



To enter SCALE, use the ▲ or ▼ switch to raise or lower the displayed reading to equal the calculated reading for SCALE. Press the **S** switch to enter the displayed reading into temporary memory and STEP to the next parameter. **NOTE: Maximum scale factor is 3.2.**

**NOTE: OFFSET and SCALE must be calculated using specific formulas. These formulas are listed in the Appendix to this manual.**




To select decimal point position, use the ▲ or ▼ switch to flash the location of the desired decimal point. Press the **S** switch to enter the displayed location into temporary memory. dP is displayed for one second followed by 8.8.8.8.8. The previously selected decimal point position will flash. If no decimal points are flashing, then the decimal point has been selected to be "Off the Display."




In RUN mode, all values in temporary memory are placed in non-volatile memory. To enter RUN mode, release the **S** switch while run is displayed. Hold the **S** switch down while run is displayed to keep the unit in SETUP mode.

### 3.4 Other Displayed Messages for Digital Limits Option C

When equipped with Option C, the meter may display several messages during operation:

| | |
|---|---|
| [HI ] | Alternates with reading when SP 1H is exceeded. SP1 ALARM is on. |
| [LO ] | Alternates with reading when SP 1L is exceeded. SP1 ALARM is on. |
| [ HI] | Alternates with reading when SP 2H is exceeded. SP2 ALARM is on. |
| [ LO] | Alternates with reading when SP 2L is exceeded. SP2 ALARM is on. |
| [HI HI] | Alternates with reading when both SP 1H and SP 2H are exceeded. SP1 and SP2 ALARMS are on. |
| [LO LO] | Alternates with reading when both SP 1L and SP 2L are exceeded. SP1 and SP2 ALARMS are on. |
| [HI LO] | Alternates with reading when both SP 1H and SP 2L are exceeded. SP1 and SP2 ALARMS are on. |
| [LO HI] | Alternates with reading when both SP 1L and SP 2H are exceeded. SP1 and SP2 ALARMS are on. |

# APPENDIX

## I. Setting OFFSET and SCALE - Option F

During SETUP, the Display value is calculated according to specific Offset and Scale values (see Formula 1 below). These Offset and Scale values also must be properly calculated using specific formulas (see Formulas 2 and 3 below).

**Formula 1 -- Offset and Scale Value**

DISPLAY (Y) = SCALE (m) * INPUT (x) + OFFSET (b), or Y=mx + b

**Formula 2 -- Scale Factor**

$$\text{SCALE (m)} = \frac{\text{Display Hi - Display Lo}}{\text{Input Hi - Input Lo}}$$

Example A: (for Models 2810-03, 2811-02, 2812-03, 2820-24)
Input voltage = -5V to +5V
Desired display = 0 to 200.0.

$$\text{(Scale) } m = \frac{2000 - 0000}{+5000 - (-5000)}$$

$$m = \frac{2000}{10000}$$

$$m = .2000$$

**NOTE: All numbers must be represented by the exact display reading disregarding the decimal point.**

i.e. 2810-03 (±20V FS) with +5V on input would display 0 5 0 0.

Example B: (for Model 2820-26 thru -29)
Input current = 4 to 20mA
Desired display = 0 to 1000

$$\text{(Scale) } m = \frac{1000 - 0000}{10000 - 2000}$$

$$m = \frac{1000}{8000} = 0.1250$$

FULL RANGE INPUT TABLE

| | | |
|---|---|---|
| 0mA | 0000 | |
| 4mA | 2000 | 50 Ω Sh |
| 10mA | 2000 | 20 Ω Sh |
| 20mA | 10000 | 50 Ω Sh |
| 50mA | 10000 | 20 Ω Sh |

**NOTE: INPUT HI and INPUT LO are the current (4 Digits) * Shunt Value**

i.e. 20mA = 0200 * 50 = 10000
4mA = 0040 * 50 = 2000

**Formula 3 -- Offset Factor**

**OFFSET (b) = Display Lo - (Scale (m) * Input Lo)**

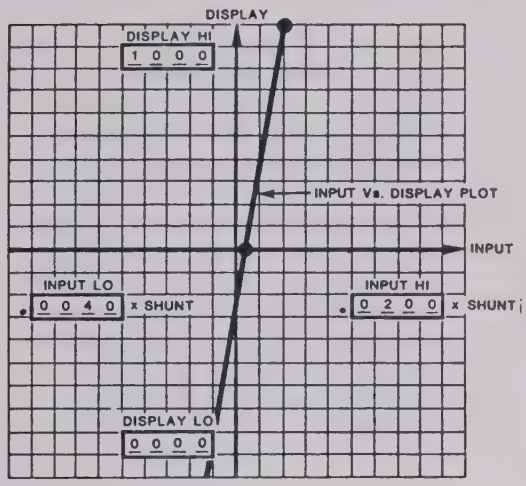
From Example A above:

b = 0000 - (.2000 * -5000)
b = 0000 - (-1000)
b = 1000

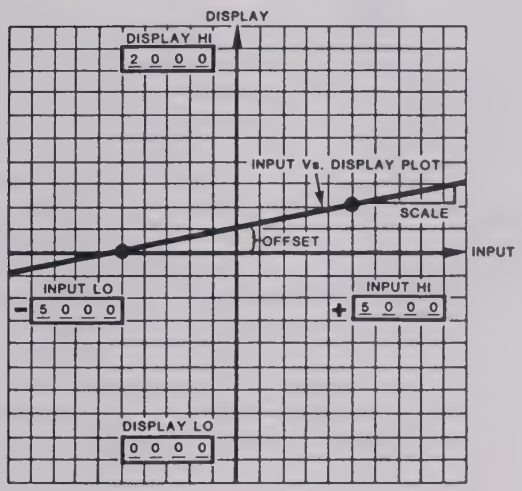
From Example B above:

b = 0000 - (.1250 * 2000)
b = 0000 - 250 = -250

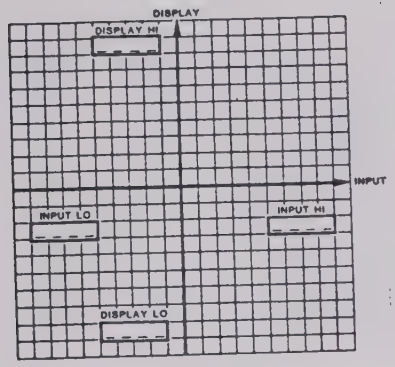
**2820-26/27/28/29**
**SCALE AND OFFSET GRAPH**



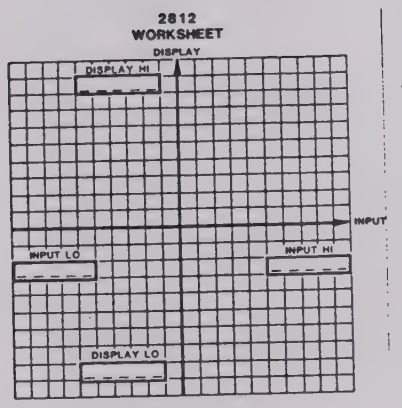

**MODEL 2810, 2811, 2820-(22-25)**
**SCALE AND OFFSET GRAPH**



2810, 2811, 2820-(22-25)
WORKSHEET




2812
WORKSHEET




2820-26/27/28/29
WORKSHEET

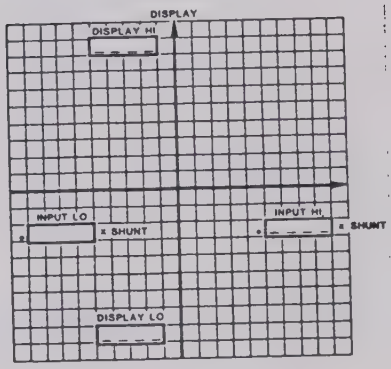


Fig. 3A: Field Calibration for New Boards (also see Fig. 13A)

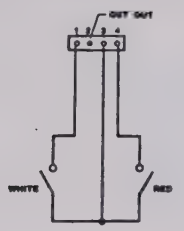
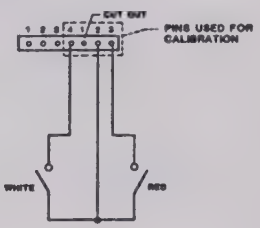



Fig. 3B: Field Calibration for Old Boards (also see Fig. 13B)



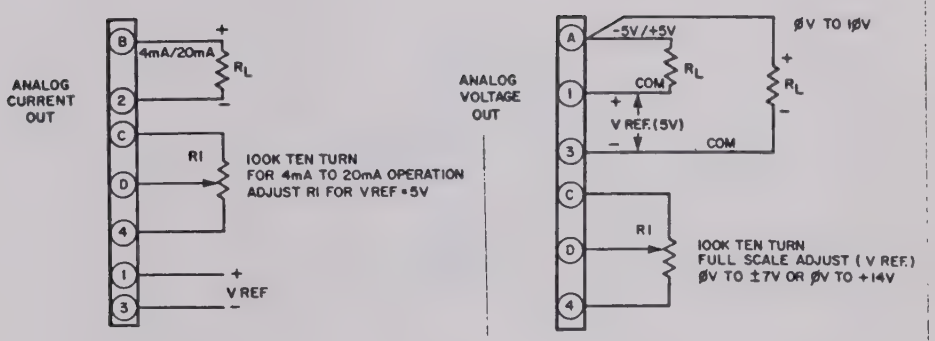




Figure 4. Analog Output Connection (Option H)

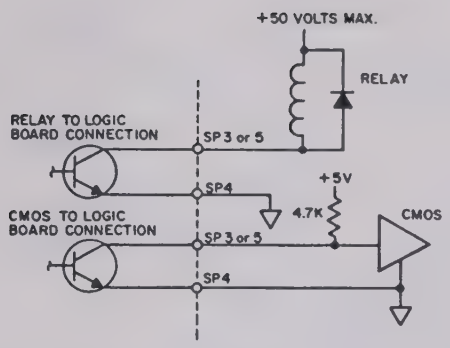



Figure 5. Relay Connection/CMOS Logic Connection (Option C)

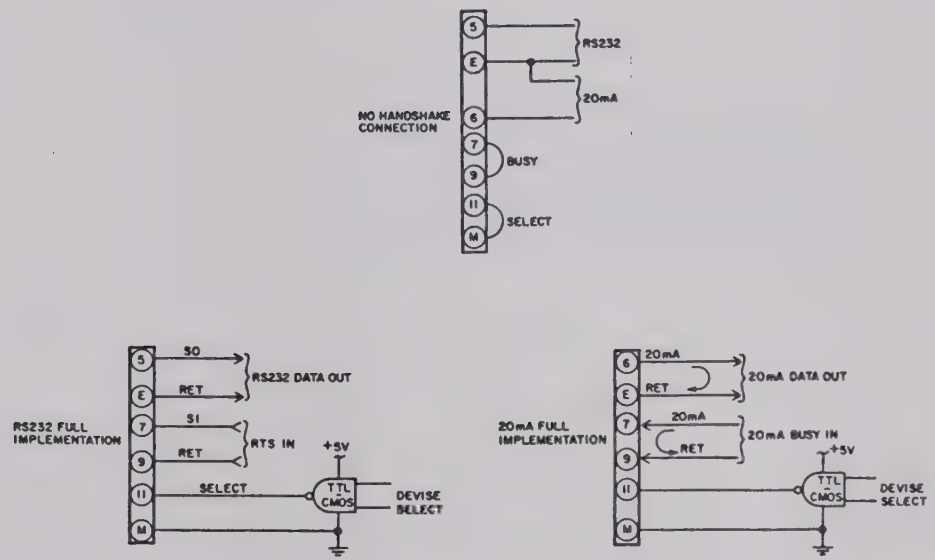





Figure 6. Serial Interface Connections (Option T)

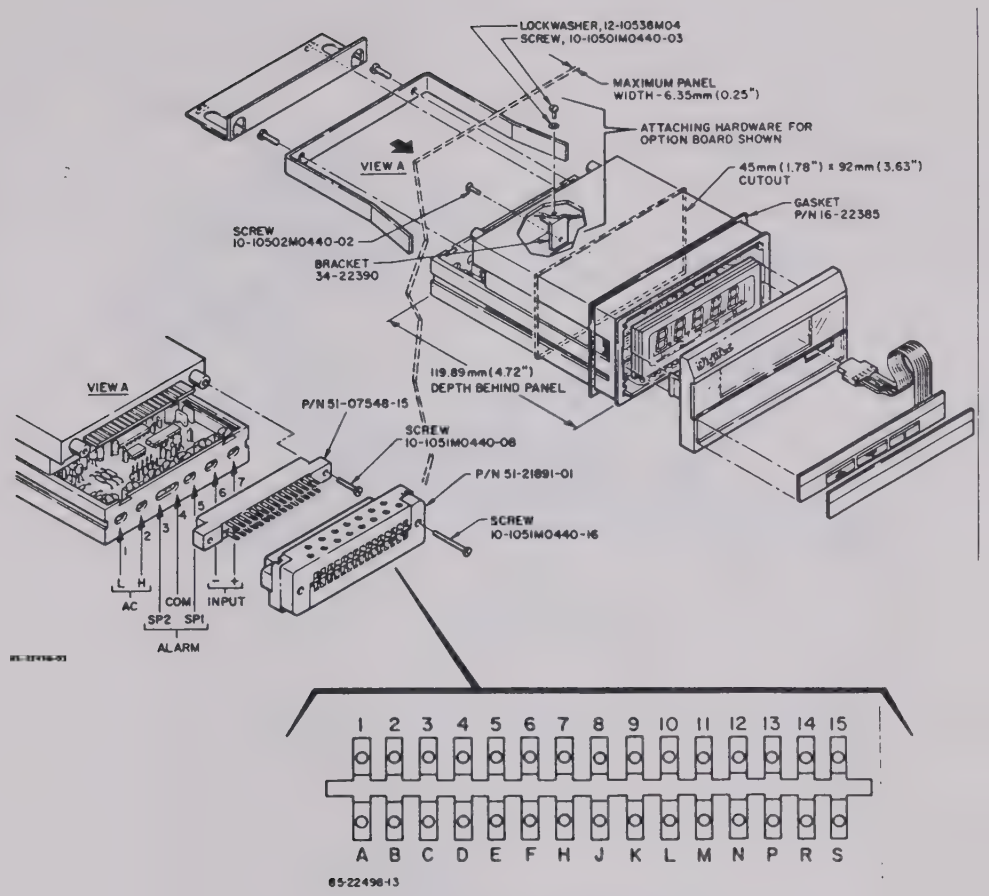



Figure 1a. Series Installation

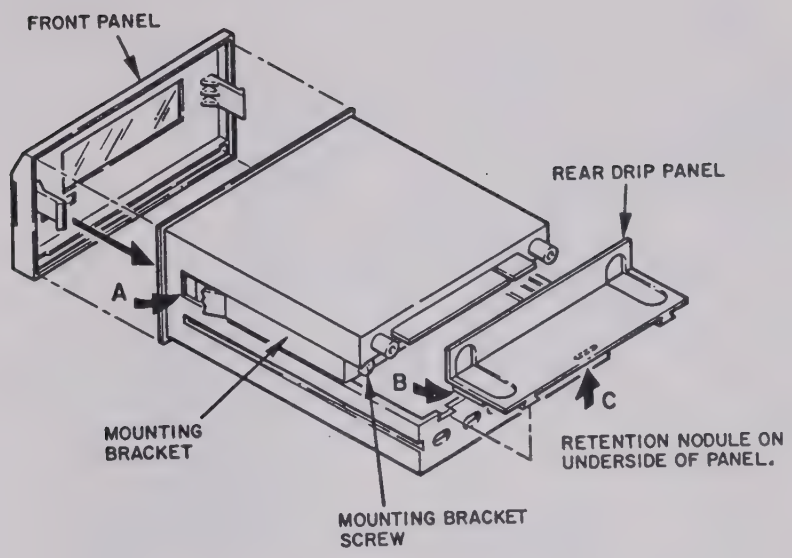



Figure 1b. Front Panel and Rear Drip Panel Disassembly

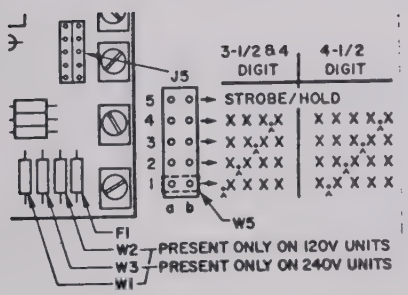



Figure 2. Decimal Point Selection

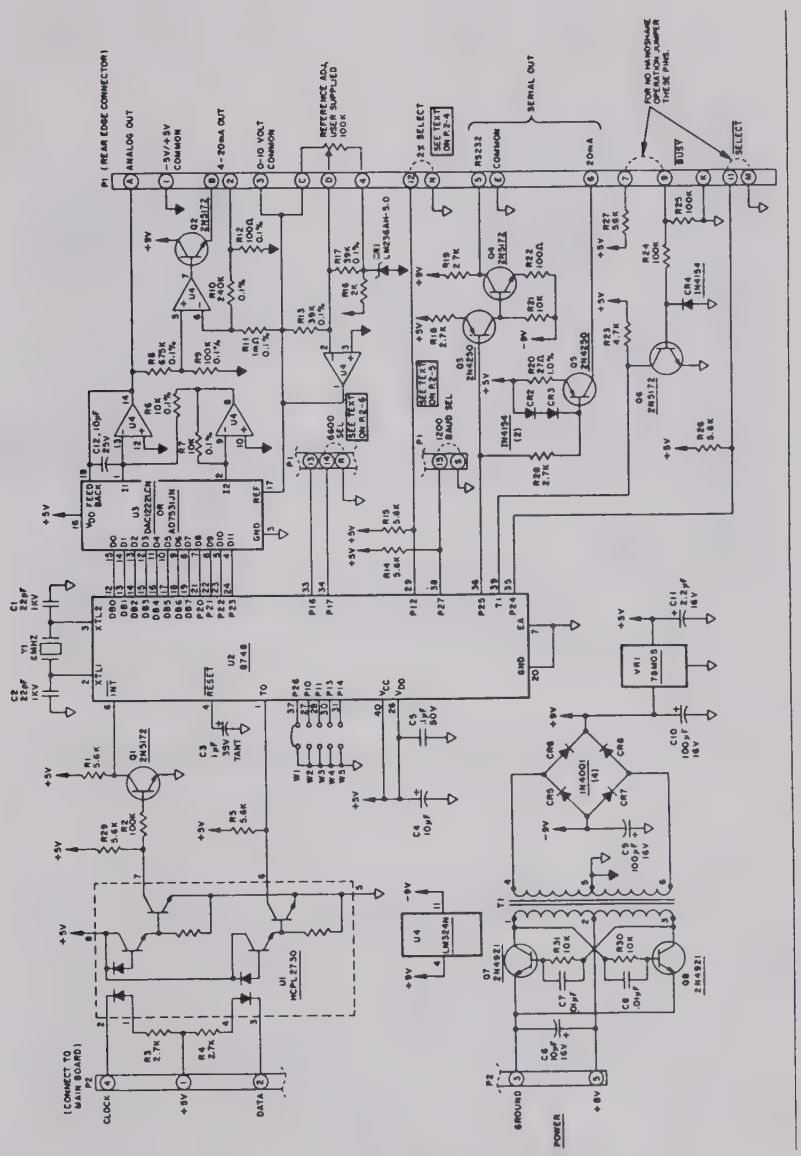


Figure 7. Serial and Analog Interface Board Schematic

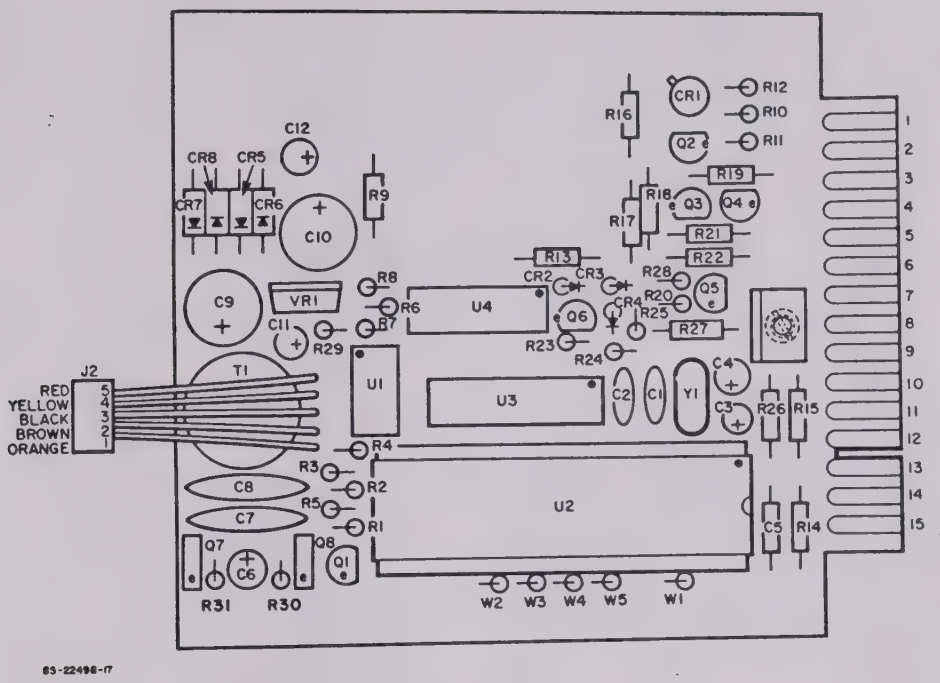



Figure 8. Serial and Analog Interface Board Component Layout

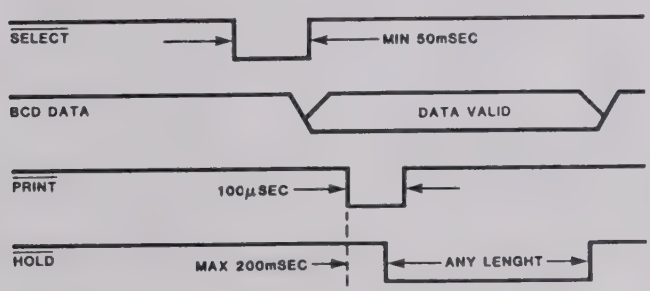



Figure 9. Parallel BCD Timing Diagram

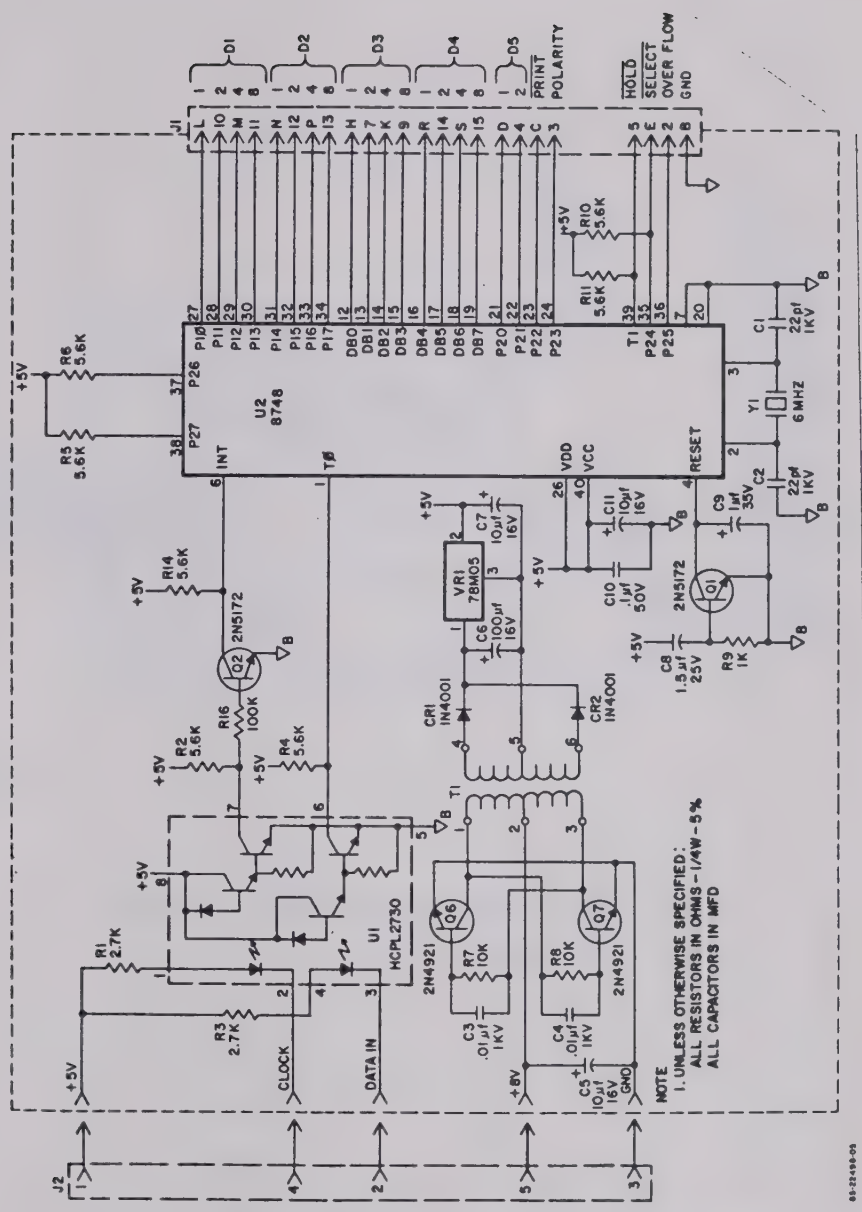



Figure 10. Parallel BCD Output Board Schematic (Option E)

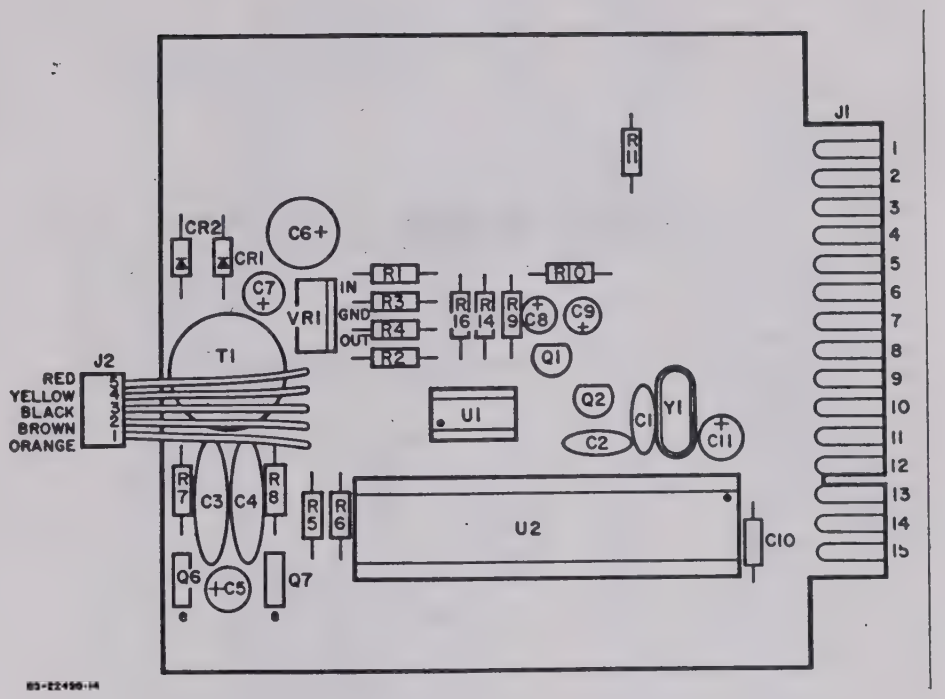



Figure 11. Parallel BCD Output Board Component Layout

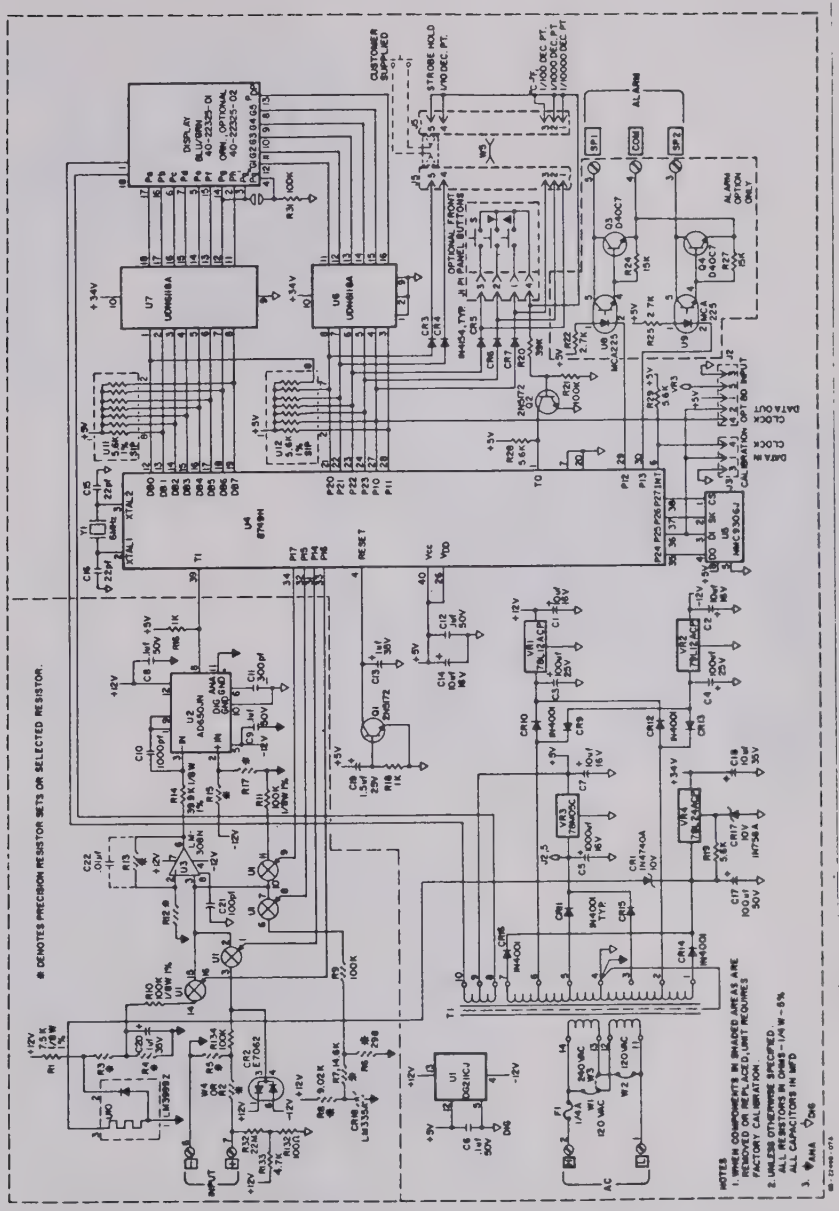


Figure 12. Voltmeter/Ammeter Schematic

Fig. 13A: Voltmeter/Ammeter Assembly Drawing (New Board)

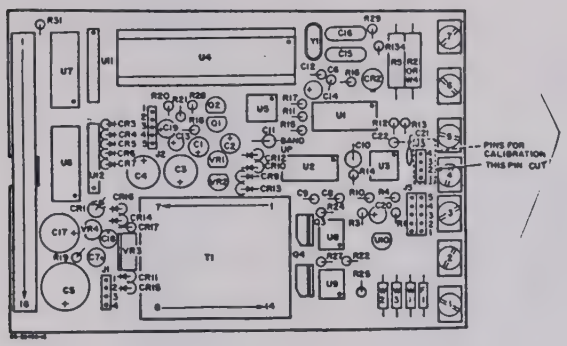
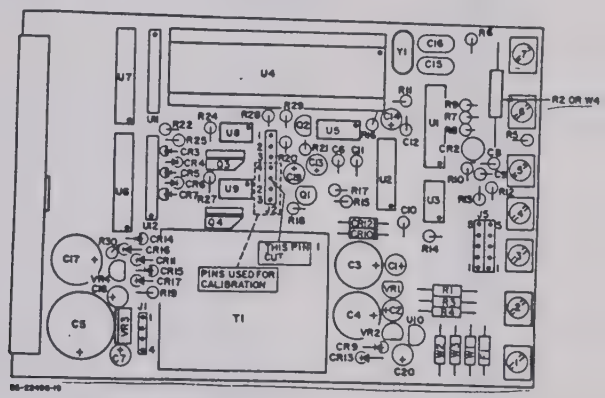



Fig. 13B: Voltmeter/Ammeter Assembly Drawing (Old Board)



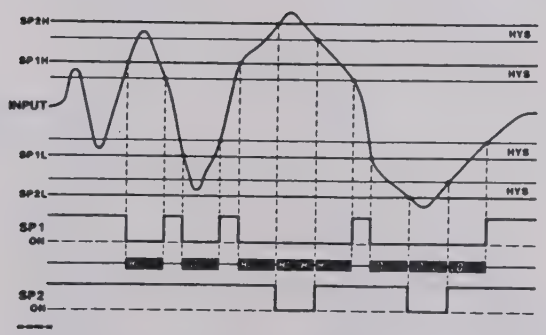




Figure 14. Set Points and Hysteresis

# PARTS LIST

## IQ-280 SERIES
## Voltmeter/Ammeter
## Models 2810, 2811, 2812, 2820

ASS'Y, PC BD., PARALLEL
USED ON: 01-02800M

ASSEMBLY . . . 05-22635

| DIGITEC PART NUMBER | DESCRIPTION | REF-DES |
|---|---|---|
| 07-22547 | EPROM, Programmed | U02 |
| 40-07787-01 | Diode, Power, 1N4001 | CR02 |
| 40-07787-01 | Diode, Power, 1N4001 | CR01 |
| 40-11353 | Transistor, NPN, 2N5172 | Q01 |
| 40-11353 | Transistor, NPN, 2N5172 | Q02 |
| 40-12366 | Transistor, NPN, Power, 2N4921 | Q06 |
| 40-12366 | Transistor, NPN, Power, 2N4921 | Q07 |
| 40-16501 | Regulator, +5V, 78M05C | VR01 |
| 40-18745 | I.C., Optical-Isolator, HCPL2730 | U01 |
| 40-19735-10 | Crystal, 6MHz | Y01 |
| 42-22675 | Transformer | T01 |
| 55-10101HK001 | Res., C.C., 1K Ohm 1/4W 5% | R09 |
| 55-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R01 |
| 55-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R03 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R02 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R04 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R05 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R06 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R11 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R14 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R10 |
| 55-10101HK010 | Res., C.C., 10K Ohm 1/4W 5% | R07 |
| 55-10101HK010 | Res., C.C., 10K Ohm 1/4W 5% | R08 |
| 55-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R16 |
| 56-10215A220JA10 | Cap., C.D., 22pF 1KV 10% | C01 |
| 56-10215A220JA10 | Cap., C.D., 22pF 1KV 10% | C02 |
| 56-10215D103KT10 | Cap., C.D., 0.1uF 1KV 20% | C03 |
| 56-10215D103KT10 | Cap., C.D., 0.1uF 1KV 20% | C04 |
| 56-12731A155N25 | Cap., Tant., 1.5uF 25V +50% -20% | C08 |
| 56-12731B105N35 | Cap., Tant., 1uF 35V +50% -20% | C09 |
| 56-20588-106M16 | Cap., Electro., 10uF 16V 20% | C07 |
| 56-20588-106M16 | Cap., Electro., 10uF 16V 20% | C11 |
| 56-20588-106M16 | Cap., Electro., 10uF 16V 20% | C05 |
| 56-20588-107M16 | Cap., Electro., 100uF 16V 20% | C06 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C10 |

ASSEMBLY . . . 05-22627-00

ASS'Y,PC BD,COMMON,
SERIAL & ANALOG
USED ON: 05-22627-01 &
05-22627-02

| | | |
|---|---|---|
| 07-22645 | EPROM, Programmed | U02 |
| 40-07787-01 | Diode, Power, 1N4001 | CR05 |
| 40-07787-01 | Diode, Power, 1N4001 | CR06 |
| 40-07787-01 | Diode, Power, 1N4001 | CR07 |
| 40-07787-01 | Diode, Power, 1N4001 | CR08 |
| 40-11353 | Transistor, NPN, 2N5172 | Q01 |
| 40-12366 | Transistor, NPN, Power, 2N4921 | Q08 |
| 40-12366 | Transistor, NPN, Power, 2N4921 | Q07 |
| 40-16501 | Regulator, +5V, 78M05C | VR01 |
| 40-18745 | I.C., Optical-Isolator, HCPL2730 | U01 |
| 40-19735-10 | Crystal, 6MHz | Y01 |
| 42-22675 | Transformer | T01 |

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 53-10101HK002R2 | Res., C.C., 2.2K Ohm 1/4W 5% | R29 |
| 53-10101HK002R2 | Res., C.C., 2.2K Ohm 1/4W 5% | R05 |
| 53-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R03 |
| 53-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R04 |
| 53-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R01 |
| 53-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R14 |
| 53-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R15 |
| 53-10101HK010 | Res., C.C., 10K Ohm 1/4W 5% | R30 |
| 53-10101HK010 | Res., C.C., 10K Ohm 1/4W 5% | R31 |
| 53-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R02 |
| 56-10215A220JA10 | Cap., C.D., 22pF 1KV 10% | C01 |
| 56-10215A220JA10 | Cap., C.D., 22pF 1KV 10% | C02 |
| 56-10215D103KT10 | Cap., C.D., .01uF 1KV 20% | C07 |
| 56-10215D103KT10 | Cap., C.D., .01uF 1KV 20% | C08 |
| 56-12731B105N35 | Cap., Tant., 1uF 35V +50% -20% | C03 |
| 56-12731D106N25 | Cap., Tant., 10uF 25V +50% -20% | C12 |
| 56-20588-106M16 | Cap., Electro., 10uF 16V 20% | C06 |
| 56-20588-106M16 | Cap., Electro., 10uF 16V 20% | C04 |
| 56-20588-107M16 | Cap., Electro., 100uF 16V 20% | C10 |
| 56-20588-107M16 | Cap., Electro., 100uF 16V 20% | C09 |
| 56-20588-225M50 | Cap., Electro., 2.2uF 16V 20% | C11 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C05 |

ASSEMBLY . . . 03-22627-01

ASS'Y, PC BD., SERIAL
USED ON: 01-02800?

| | | |
|---|---|---|
| 40-09297 | Diode, Signal, 1N4154 | CR02 |
| 40-09297 | Diode, Signal, 1N4154 | CR03 |
| 40-09297 | Diode, Signal, 1N4154 | CR04 |
| 40-09952 | Transistor, Signal, PNP, 2N4250 | Q05 |
| 40-09952 | Transistor, Signal, PNP, 2N4250 | Q03 |
| 40-11353 | Transistor, NPN, 2N5172 | Q06 |
| 40-11353 | Transistor, NPN, 2N5172 | Q04 |
| 30-07657 | Jumper, Zero Ohm | W05 |
| 53-10101HA100 | Res., C.C., 100 Ohm 1/4W 5% | R22 |
| 53-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R19 |
| 53-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R28 |
| 53-10101HK002R7 | Res., C.C., 2.7K Ohm 1/4W 5% | R18 |
| 53-10101HK004R7 | Res., C.C., 4.7K Ohm 1/4W 5% | R23 |
| 53-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R26 |
| 53-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R27 |
| 53-10101HK010 | Res., C.C., 10K Ohm 1/4W 5% | R21 |
| 53-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R24 |
| 53-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R25 |
| 53-10168ELA027 | Res., F.F., 27 Ohm 1/8W 1% | R20 |

ASS'Y,PC BD., ANALOG

USED ON: 01-02800H

ASSEMBLY . . . 03-22627-02

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 40-11353 | Transistor, NPN, 2N5172 | Q02 |
| 40-16665 | I.C., Op-Amp, LM324N | U04 |
| 40-22642 | I.C., D/A Converter, DAC1222LNC | U03 |
| 40-22643 | Diode, Zener, 5.0V, LM236AH-5.0 | CR01 |
| 50-07657 | Jumper, Zero Ohm | W04 |
| 55-10101HK002 | Res., C.C., 2K Ohm 1/4W 5% | R16 |
| 55-10168BLA100 | Res., F.F., 100 Ohm 1/4W 0.1% | R12 |
| 55-10168BLK010 | Res., F.F., 10K Ohm 1/4W 0.1% | R06 |
| 55-10168BLK010 | Res., F.F., 10K Ohm 1/4W 0.1% | R07 |
| 55-10168BLK039 | Res., F.F., 39K Ohm 1/4W 0.1% | R17 |
| 55-10168BLK039 | Res., F.F., 39K Ohm 1/4W 0.1% | R13 |
| 55-10168BLK100 | Res., F.F., 100K Ohm 1/4W 0.1% | R09 |
| 55-10168BLK240 | Res., F.F., 240K Ohm 1/4W 0.1% | R10 |
| 55-10168BLK675 | Res., F.F., 675K Ohm 1/4W 0.1% | R08 |
| 55-10168BLM001 | Res., F.F., 1M Ohm 1/4W 0.1% | R11 |

ASSEMBLY . . . 03-22330-00

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 40-07787-01 | Diode, Power, IN4001 | CR9 |
| 40-07787-01 | Diode, Power, IN4001 | CR10 |
| 40-07787-01 | Diode, Power, IN4001 | CR11 |
| 40-07787-01 | Diode, Power, IN4001 | CR12 |
| 40-07787-01 | Diode, Power, IN4001 | CR13 |
| 40-07787-01 | Diode, Power, IN4001 | CR14 |
| 40-07787-01 | Diode, Power, IN4001 | CR15 |
| 40-07787-01 | Diode, Power, IN4001 | CR16 |
| 40-09297 | Diode, Signal, IN4154 | CR3 |
| 40-09297 | Diode, Signal, IN4154 | CR4 |
| 40-09297 | Diode, Signal, IN4154 | CR5 |
| 40-09297 | Diode, Signal, IN4154 | CR6 |
| 40-09297 | Diode, Signal, IN4154 | CR7 |
| 40-11353 | Transistor, NPN, 2N5172 | Q1 |
| 40-11353 | Transistor, NPN, 2N5172 | Q2 |
| 40-14803 | I.C., Op Amp, LM308N | U3 |
| 40-15325 | Regulator, +12V, 78L12ACP | VR1 |
| 40-16501 | Regulator, +5V, 78M05C | VR3 |
| 40-16798 | Regulator, -12V, 79L12ACP | VR2 |
| 40-16800 | Diode, Low Leakage, Dual, E7062 | CR2 |
| 40-19733-10 | Crystal, 6MHz | Y1 |
| 40-21427 | Diode, Zener, LM3999Z | U10 |
| 40-22193 | Diode, Zener, 10V, 1W, IN4740A | CR1 |
| 40-22196 | I.C., Volt./Freq. Conv., AD650JN | U2 |
| 40-22322 | Regulator, +24V, 78L24ACP | VR4 |
| 40-22324 | I.C., Prog. Memory, NMC9306J | U5 |
| 40-22325-01 | Display, Blue/Green, FG51236 | |
| 40-22327 | I.C., Display Driver, UDN6118A | U6 |
| 40-22327 | I.C., Display Driver, UDN6118A | U7 |
| 40-22328 | I.C., Analog Switch, DG211CJ | U1 |
| 40-22691 | Diode, Zener, 10V, IN758A | CR17 |
| 42-22326 | Transformer, 115-P-48A | T1 |
| 50-07657 | Jumper, Zero Ohm | W1 |
| 50-07657 | Jumper, Zero Ohm | W2 |

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 51-18194 | Jumper, Berg | W5 |
| 52-17936-03 | Fuse, Subminiature, 1/4 Amp | F1 |
| 55-10101HK001 | Res., C.C., 1K Ohm 1/4W 5% | R16 |
| 55-10101HK001 | Res., C.C., 1K Ohm 1/4W 5% | R18 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R19 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R28 |
| 55-10101HK005R6 | Res., C.C., 5.6K Ohm 1/4W 5% | R29 |
| 55-10101HK039 | Res., C.C., 39K Ohm 1/4W 5% | R20 |
| 55-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R21 |
| 55-10101HK100 | Res., C.C., 100K Ohm 1/4W 5% | R31 |
| 55-10168ELK007R5 | Res., F.F., 7.5K Ohm 1/8W 1% | R1 |

ASSEMBLY . . . 05-22330-00

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 55-10168ELK039R9 | Res., F.F., 39.9K Ohm 1/8W 1% | R14 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R10 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R11 |
| 55-22366FJK005R6 | Res. Module, 8 Pin SIP, 5.6K Ohm 1% | U11 |
| 55-22366FJK005R6 | Res. Module, 8 Pin SIP, 5.6K Ohm 1% | U12 |
| 56-10210A220HP5 | Cap., Mica, 22pF 500V 5% | C15 |
| 56-10210A220HP5 | Cap., Mica, 22pF 500V 5% | C16 |
| 56-12731A155N25 | Cap., Tant., 1.5uF 25V +50% -20% | C19 |
| 56-12731B105N35 | Cap., Tant., 1uF 35V +50% -20% | C13 |
| 56-12731B105N35 | Cap., Tant., 1uF 35V +50% -20% | C20 |
| 56-20388-106M16 | Cap., Electro., 10uF 16V 20% | C1 |
| 56-20388-106M16 | Cap., Electro., 10uF 16V 20% | C2 |
| 56-20388-106M16 | Cap., Electro., 10uF 16V 20% | C7 |
| 56-20388-106M16 | Cap., Electro., 10uF 16V 20% | C14 |
| 56-20388-106M35 | Cap., Electro., 10uF 35V 20% | C18 |
| 56-20388-107M25 | Cap., Electro., 100uF 25V 20% | C3 |
| 56-20388-107M25 | Cap., Electro., 100uF 25V 20% | C4 |
| 56-20388-107M50 | Cap., Electro., 100uF 50V 20% | C17 |
| 56-20388-108M16 | Cap., Electro., 1000uF 16V 20% | C5 |
| 56-22254A101K1 | Cap., Ceramic, 100pF 100V 20% | C21 |
| 56-22254A103K1 | Cap., Ceramic, .01uF 100V 20% | C12 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C6 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C8 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C9 |
| 56-22254B104KR5 | Cap., Ceramic, 0.1uF 50V 20% | C12 |
| 56-22613A102JA100 | Cap., Poly., 1000pF 100V 5% | C10 |
| 56-22613A301JA100 | Cap., Poly., 300pF 63V 1% | C11 |

ASSEMBLY . . . 05-22330-01

USED ON: 2810-01/2812-01

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY . . . 05-22330-02

USED ON: 2810-02/2812-02

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK015 | Res., F.F., 15K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK035 | Res., M.F., 35K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY . . . 05-22330-03

USED ON: 2810-03/2812-03

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W6 |
| 55-10165EGM009R99 | Res., F.F., 9.99 Megohm 1W 1% | R2 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R5 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY . . . 05-22330-04

USED ON: 2810-04/2812-04

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W6 |
| 55-10165EGM009R99 | Res., F.F., 9.99 Megohm 1W 1% | R2 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK015 | Res., F.F., 15K Ohm 1/8W 1% | R13 |
| 55-22443EDK035 | Res., M.F., 35K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R5 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY . . . 05-22330-05

USED ON: 2810-08/2812-08

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDK001 | Res., Prec., 1K Ohm 1W .1% | R5 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY 05-22330-06

USED ON: 2810-09/2812-09

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 30-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA100 | Res., Prec., 100 Ohm 1W .1% | R5 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY 05-22330-07

USED ON: 2810-10/2812-10

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 30-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA010 | Res., Prec., 10 Ohm 1W .1% | R5 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY 05-22330-08

USED ON: 2810-11/2812-11

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 30-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA001 | Res., Prec., 1 Ohm 1W .1% | R5 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY 05-22330-09

USED ON: 2810-12/2812-12

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 30-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA000R1 | Res., Pres., 0.1 Ohm 1W .1% | R5 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK024 | Res., F.F., 24K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK002R7 | Res., M.F., 2.7K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-14

USED ON: 2811-08

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDK001 | Res., Prec., 1K Ohm 1W .1% | R5 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F. 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-15

USED ON: 2811-09

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA100 | Res., Prec., 100 Ohm 1W .1% | R5 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

USED ON: 2811-10

ASSEMBLY NO. 05-22330-16

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10121BDA010 | Res., Prec., 10 Ohm 1W .1% | R5 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

USED ON: 2811-11

ASSEMBLY NO. 05-22330-17

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10122BDA001 | Res., Prec., 1 Ohm 2W .1% | R5 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-10

USED ON: 2811-01

| DIGITEC PART NUMBER | DESCRIPTION | REF DES |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W4 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-11

USED ON: 2811-02/2820-22/
2820-23/2820-24/

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W6 |
| 55-10165EGM009R99 | Res., F.F., 9.99 Megohm 1W 1% | R2 |
| 55-10168ELK001 | Res., F.F., 1K Ohm 1/8W 1% | R12 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK047 | Res., F.F., 47K Ohm 1/8W 1% | R13 |
| 55-22443EDK001R5 | Res., M.F., 1.5K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R5 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-12

USED ON: 2811-03

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 50-07657 | Jumper, Zero Ohm | W6 |
| 55-10165EGM009R99 | Res., F.F., 9.99 Megohm 1W 1% | R2 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R5 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

ASSEMBLY NO. 05-22330-13

USED ON: 2811-04

| | | |
|---|---|---|
| 07-22570 | EPROM, Programmed | U4 |
| 55-10165EGM009R99 | Res., F.F., 9.99 Megohm 1W 1% | R2 |
| 55-10168ELK008R5 | Res., F.F., 8.5K Ohm 1/8W 1% | R17 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R12 |
| 55-10168ELK010 | Res., F.F., 10K Ohm 1/8W 1% | R15 |
| 55-10168ELK039 | Res., F.F., 39K Ohm 1/8W 1% | R13 |
| 55-10168ELK100 | Res., F.F., 100K Ohm 1/8W 1% | R134 |
| 55-22443EDK010 | Res., M.F., 10K Ohm 1/8W .5% | R5 |
| 55-22443EDK015 | Res., M.F., 15K Ohm 1/8W .5% | R4 |
| 55-22443EDK100 | Res., M.F., 100K Ohm 1/8W .5% | R3 |

MP MASTER
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